

## **A stress coping style inventory of students at universities and colleges of technology**

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**ABSTRACT:** Four hundred questionnaires were handed out, of which 282 were effective and used for the purposes of this research. After data coding, the Statistical Package for the Social Sciences (SPSS for Windows XP) was used to carry out exploratory factor analysis. After eliminating unwanted information from the results of analysis, the four factors extracted were: active problem coping, active emotional coping, passive problem coping and passive emotional coping. The total variance explained in this inventory was 63.26%. The Cronbach reliability test was carried out and  $\alpha$  value obtained was between 0.860-0.876. An  $\alpha$  value of the overall stress coping style questionnaires was 0.830. The Pearson correlation analysis was used for this research to obtain the significant level of related coefficients of various factor components and total (0.557-0.589).

### **INTRODUCTION**

Kausar and Munir considered that individual stress coping comes from two main sources: emotional coping and problem management coping [1].

Pearlin and Schooler pointed out that the functions of coping included: changes that caused nervous situations, restraining things from becoming stress-based on individual experiences and managing stress after events have occurred [2]. However, Price considered that not all coping behaviours are effective. Good coping behaviours can decrease the damage brought about by stress. However, inappropriate coping behaviours can increase individual problems, thereby increasing the individual's stress. Bad coping behaviours also have an unfavourable influence on the mind and body, including: direct damage to the body, such as smoking and alcoholic coping methods; psychological problems, such as prolonging and avoiding coping methods, continuing to cause individuals to have depression, animosity and even suicidal behaviours; inappropriate stress and coping, which can cause physiological and psychological illnesses, causing society to pay more costs to deal with it [3].

This research makes use of reviewed and relevant literature as its basis and views the causes of stress from different points to effectively assist teaching units in understanding the related problems of student stress at modern universities and colleges of technology. This then provides assistance and preventative measures. Consequently, the research is of great value and importance.

### **LITERATURE REVIEW**

Lazarus and Folkman pointed out that when individuals face stressful events that can be controlled by them, they mostly respond with problem-focused strategies. In contrast, when they face stressful events that they cannot control, they mostly respond with emotional-focused strategies [4]. Stone and Neale divided coping methods into eight types: distraction, situation re-definition, direct action, catharsis, acceptance, seeking social support, relaxation and religion [5]. Folkman and Lazarus used problem- and emotion-focused coping methods as the basis and developed a revised version of the Ways of Coping Checklist (WCC). This was used to test university students, and the results showed eight inventories: direct coping, alienation, self-control, search for social support, accept responsibilities, prevention/avoidance, plan for solving problems and positive appraisal coping [6].

The research results of Scheier, Weintraub and Carver on the main stress coping strategies include: denial/alooftness; centre of the problem; self-accusation; acceptance/abandonment; active re-interpretation; evasion through delusions; and social support [7].

Pine and Arosen divided coping strategies into direct and indirect strategies, and categorised concepts into action and non-action. The two are mutually combined to form four categories: *direct/action*, *direct/non-action*, *indirect/action*, and *indirect/non-action*. The research findings show that the most active strategy beneficial for individual growth is *direct/action*, which emphasises facing stressful situations with courage. However, the most passive strategy harmful for physical and mental health is *direct/non-action*, which is where harmful alcohol or drug abuse is adopted to flee from reality, which may cause irrecoverable harm [8].

Moreover, Justice pointed out the Coping Matrix, a table that can be used to explain coping strategies and coping resources. This Coping Matrix divides coping into problem-focused and emotion-focused. Problem-focused coping points at changing the strong source of problems, including the external and internal environment; emotion-focused coping points at moderating the hurt or difficulties brought on by problems, including the physical and emotional perspective. The coping strategies used by individuals include three methods of direct action, indirect action, or controlled action, and whether coping resources exist or not, they hinder individuals or advance the important adjustment factors of individual success [9].

Carver, Weintraub and Scheier's research on university students developed the cope inventory, which is a multidimensional inventory, integrating the similar coping methods into two types [10]:

- Problem-focused coping: includes the adoption of active coping actions, suspension of competitive activities, suspension of coping behaviours and search for tools of social support;
- Emotion-focused coping: includes denial, acceptance, search for religion, positive interpretation and search for emotional social support.

Endler and Parker developed a multidimensional coping inventory (MCI), which includes three methods: mission-focused (similar to problem-focused) coping; emotion-focused coping; and evasion-focused coping [11].

Halstead, Johnson and Cunningham divided the stress coping methods of young people into four categories: problem-focused coping, search for social support, positive thinking and evasion coping [12].

Carver and Scheier investigated university students and the results showed that when exams were the source of stress, this stress was estimated as threatening and harmful stress. These results also show that more problem-focused coping, search for social support and positive appraisals were often used [13].

Thoits' research pointed out that when people continuously have higher self-esteem and control power, they often tend to use the problem-focused coping strategies method with initiative; when people have lower self-esteem or lack control, they tend to passively use the emotion-focused coping strategies method [14].

Timmins and Kaliszer investigated the source of stress experienced by 110 university students of the nursing department and the research results showed that schools arranged education for clinical internship, guided students to face stress recognition, and incorporated counselling from direct internship professors as the main coping strategies [15].

Kim and Seidlitz investigated 113 university students and examined the psychological and physiological aspects of adjustment. The research results showed that stress coping methods were categorised into: problem solving; search for support; rejection; sense of humour; and physiological situations [16].

Misra and Castillo used the questionnaire investigation method to investigate university students and the research findings show that the stress coping attitudes of these students included: frustrations, disputes, changes and taking up responsibilities [17].

Karademas and Kalantzi-Azizi used the questionnaire investigation method to investigate university students and the results emphasised that when individuals face stress, they choose different stress estimations to cope with stress [18].

Twamley, Hami and Stein investigated the individual stress coping methods of 235 university students and the research results divided the methods into three types: current experience mode; evasion; and negative strategic modes, such as alcohol and drug abuse [19].

Iwanaga, Yokoyama and Seiwa based their investigations on optimists and pessimists and the research results divided stress coping methods into: problem management; problem estimation; re-establishment of appraisals; and evasion [20].

The research of Steele, Lauder, Caperchione and Anastasi on the university students of the nursing department show that when students face clinical care, interpersonal relationships and financial problems, they use effective management experiences, such as a support Web site, sequential handling, active anticipation and attitude, to cope effectively [21].

## RESEARCH METHODOLOGY

The research presented here uses the basic theory and related research literature on stress coping style to construct a Stress Coping Style Inventory (SCSI) for students of universities and colleges of technology. An interview programme on the stress coping style of these students was drafted and stratified random sampling was used to carry out in-depth interviews with students at ten universities and colleges of technology. The handling of these situations conformed to the reliability and validity of qualitative research. Finally, data coding was used to establish a pre-test questionnaire on the stress coping style perceived by students at universities and colleges of technology. After testing the questionnaires, statistical data were obtained in order to allow the questionnaires to conform to the reliability and validity of quantitative data. The Statistical Package for the Social Sciences (SPSS for Windows XP) was used to carry out exploratory factor analysis, and the formal inventory of this research was formed after the reliability and validity of the questionnaires were tested.

## RESEARCH PROCESS

### Formal Interview Process

An interview programme on the stress coping style of the students was drafted and stratified random sampling was used to carry out in-depth interviews of students of ten universities and colleges of technology. Stratified random sampling was used to select and invite the targets for the in-depth interview for this research. It was hoped that ample consideration had been given to the various types of interviewee, such as gender, school classification, administrative division, whether they lived in dormitories, as well as to school styles such as university of science and technology, colleges of technology, community college or junior college.

### Analysis of Interview Data Coding

In view of qualitative research, these are the methods of the research:

- The encoding system was discussed with, and corrected by, two experts; differentiation and denomination were commonly agreed.
- Establishing the validity of data coding: Two encoders were invited to assist in the impersonal data analysis of the interview content.
- Establishing the reliability of data coding: In order to increase the reliability of the coded script of this research, Holsti's coefficient of reliability (CR) pointed out by Miles and Huberman was used to carry out the reliability test of the scorer [22]. Therefore, after data coding and analysis by the researcher and the two encoders, the coding of the scorer of the various factors in the questionnaires was 0.985, 1.00 and 0.985 separately. Conforming to Garrison, Anderson and Archer showed that the coefficient of reliability of the scorer was good and consistent [23].
- A further estimation of this research was carried out and the research of Goetz and LeCompte was used to establish the reliability and validity indices; to ascertain whether the survey analyses of this research conformed to the basis of reliability and validity of the methods used in completing in-depth interviews [24]. The estimation results on the aspect of reliability included external reliability and internal reliability, both of which were good.

### Establishing Pre-test Inventory

Based on the coding and punctuations of the above peer encoders, and after categorising and generalising these data, experts and learners were requested to assist in the discussion and the data coding was converted into the items on the pre-test questionnaires of this research. These items were used to complete the initial draft of the pre-test questionnaires. Afterwards, five experts were requested to examine the content validity of the methods; based on the various items of the content, corrections and modifications were carried out and, after modification, 30 items were chosen.

### Implementing a Pre-test

Four hundred pre-test questionnaires were issued and 347 were returned. There is a reverse direction in the design of the pre-test questionnaires, so after a strict selection and elimination of ineffective questionnaires, the remaining number in the effective sample size was 282. The usable rate of return was 70%. These effective samples showed that they can be stable when used in statistical analysis and conformed to the views of Hakstian, Rogers and Cattell [25], and Guadagnoli and Velicer [26]. The questionnaires drafted in this research reflected Likert's five-point scale [27] and the answering methods were from the answers of the actual six months' experiences of the interviewees.

### Sampling Data with Statistic Analysis

The Statistical Package for the Social Sciences (SPSS for Windows XP) software was used to carry out exploratory factor analysis of the pre-test inventories, after the items based on the elimination standards were deleted and the reliability and validity of the questionnaires was tested. The explanations are as follows.

### Item Analysis

Wolman standards of critical ratio were used in the research [28]. Therefore, the Pearson product-moment value of the various items and total points did not obtain 0.05 significance level, and the coefficient of correlation was below 0.30, showing that it should be eliminated.

### Content Validity

After drafting the pre-test questionnaires of this research, experts were requested to assist in ensuring the appropriateness of their content; then correction and adjustments were carried out.

### Factor Analysis

The use of exploratory factor analysis in this research raises questions that must be heeded, such as:

- The Bartlett's test of this questionnaire was similar to the Chi-square value, which was 4458.873. The number of degrees of freedom was 378, which showed that the questionnaire reached the significance level,  $p < 0.000$ . After statistical calculations, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value was 0.848 and it, therefore, conformed to the determining principle of the Kaiser KMO statistical scale. This belonged to the meritorious grade and represented the appropriateness for carrying out factor analysis [29].
- Bryman and Cramer's research was used, while the varimax of the orthogonal rotations method was used in the SPSS statistical software [30]. The sample size in this research was more than 250 and maintained the eigen-value above 1, based on the views of Hakstian et al [25]. Principal component analysis was selected to estimate factor loading. The factor loadings of communalities' extraction were permitted by over 0.40.
- Four factors were extracted from the stress coping style pre-test questionnaires through the rotation sums of squared loadings. The accumulated explanation of the total variance explained was 63.26% and this showed that the stress coping style questionnaire used in this research conformed to the determination standards established by Tabachnick and Fidell [31]. The components matrix of the rotation of various items produced an excellent result.

### Reliability Analysis

The Cronbach reliability test was carried out in this research. Factor 1 showed 0.88, Factor 2 showed 0.87, Factor 3 showed 0.86 and Factor 4 showed 0.86. The  $\alpha$  value of the overall stress coping style inventory was 0.83. This showed that the reliability of the various factors of the stress coping style pre-test questionnaire achieved the levels required by the estimation standards of George and Mallery [32].

### Product-moment Correlation

Pearson's product moment correlation coefficient was used to calculate the relationship. The correlation coefficient was between 0.557 and 0.589, and showed that there was a significant relationship between the various factors and item-total correlation of the questionnaires.

## FORMAL INVENTORY

According to the various reliability and validity tests referred to above, the stress coping style pre-test inventory of this research returned good results. After exploratory factor analysis, four factors were obtained that must be given a denomination. The researcher requested five experts to commonly check, correct and obtain the names of the various factors, such as active problem coping, active emotional coping, passive problem coping and passive emotional coping (Table 1). The various items in the stress coping style inventory are shown in Table 2.

Table 1: Factor name and item number.

Factor	Factor A	Factor B	Factor C	Factor D
Factor name	active emotional coping	passive emotional coping	active problem coping	passive problem coping
Item number	1-8	9-14	15-20	21-28

## CONCLUSION

The stress coping style inventory of university and college of technology students, who participated in this research, points at the methods selected along with stress coping as a type of process and attitude. The SCSI is divided into four factors, with a total of 28 questions. Likert's five-point scale was used, ranging from 5 *completely agree* to 1 *completely disagree*. The higher the points achieved in each factor represented, the higher is the rate of this coping style used. On the other hand, the lower the points represented, the lower is the type of coping style used.

Table 2: Question content of stress coping style inventory.

How do you deal with it when you face academic stress or problems during this semester?	
No.	Items
1	I try to do or think of some things that will make me feel happier, and allow myself to relax.
2	I try to adjust my mindset and allow myself to be happier.
3	I talk with classmates or friends, or disclose to my online friends.
4	I let myself calm down first and think of how to reconcile the negative emotions.
5	I eat and have fun to decrease the stress first.
6	I consider it to be a type of self-challenge.
7	I do usual things such as watching TV, reading comics, listening to music, sleeping, eating or going out to temporarily forget these frustrating things.
8	I tell myself to persevere.
9	I give up and blame God for being unfair when I face stress.
10	I make my friends uncomfortable when they provoke me when I am feeling down.
11	I do not give in when I argue with my friends.
12	I put my anger or fretful emotions on others.
13	I blame myself, retreat or shut myself away when I face stress.
14	I generalise that I have bad luck when I face stress.
15	I search and look for related data from the library or the Internet to do my homework.
16	I discuss issues with teachers, family, seniors or friends and classmates and ask for their opinions.
17	When I encounter conflicts in my academic study and activities, I will first arrange and plan.
18	I simplify the question and make it easy to solve.
19	I use a calm and optimistic attitude to think about how to cope with the problem.
20	I stay up finishing my homework until midnight.
21	I leave aside the problem first.
22	I passively let nature take its course.
23	I am used to leaving aside the problem and not handling it for the time being.
24	I decrease my standards and try again with the new standards.
25	I look for religious hope or comfort for my soul.
26	The numbers of classes I bunk are becoming more and more.
27	I make myself numb by drinking alcohol or drug abuse. I leave the problem aside.
28	I study the subjects I like better when I am in a class I do not like.

The coping behaviour and attitude that can be selected is as follows:

- Active problem coping: points at instances when individuals face stress, they solve their problems by looking at the centre of the problem and assist themselves or search for assistance, including:
  - Solving a problem: includes simplifying the problem, getting to the main point, being calm and optimistic, independent planning and handling of matter.
  - Search for assistance: includes search for external resources, such as teachers or friends or collecting related data from various channels.
- Active emotional coping: points at individuals adopting the attitude of emotional adjustment first, when faced with stress, including:
  - Emotional adjustment: points at adjustment attitudes such as positive thinking emotions and self-encouragement.
  - Emotional outburst: points at shifting the attention, changing the emotions, and searching for external resources to assist in adjusting the emotions or searching for de-stressing methods.
- Passive problem coping: points at individuals adopting procrastinating and evasive behaviours when facing stress, including:
  - Procrastinating problems: temporarily putting aside or passively constraining the problem.
  - Evasion of problems: includes alcohol or drug abuse to cause numbness, evade problems, and decrease standards.
- Passive emotional coping: points at a passive situation that appears when an individual faces stress, including:
  - Emotionally downcast: points at constraining emotions and self-accusation, blaming God and others or giving up.
  - Loss of emotional control: points at getting angry easily or blaming others.

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